



Technology Implementation A Cross-Border View

Paul McCoy
Trans-Elect, Inc
October 20, 2004

Trans-Elect

- Single purpose company, with a cross border view of the business, can address issues and opportunities more quickly - not distracted by other lines of business
- Conclusions reached in each company independently lend support to the other.

AltaLink Facts

Headquarters: **Calgary, Alberta**

Employees: **233**

System Voltage: **500, 240, 138 & 69 kV**

Territory: **Province of Alberta, Canada**

500 kV Line KM: **212**

240 kV Line KM: **4350**

138 kV Line KM: **5700**

69 kV Line KM: **800**

Substations: **260**



METC Facts

Michigan Electric Transmission Company

Headquarters: **Ann Arbor, Michigan**

Employees: **55**

System Voltage: **345 kV & 138 kV**

Territory: **Central / Western Michigan**

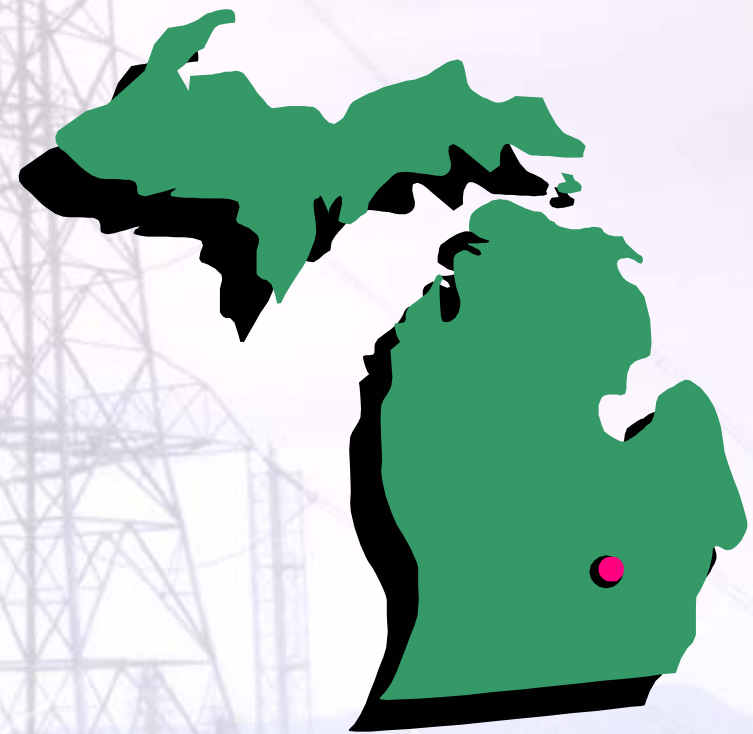
345 kV Line Miles: **2,100**

138 kV Line Miles: **3,850**

Substations: **82**

Power Transformers: **31**

Breakers: **485**



Business Strategy

- High system reliability is critical
- Leverage outsourcing to achieve best in class
- Keep key decision making centers in house; Asset Management & Planning
- Leverage technology to support key business decision centers

Decisions

- Strategic decisions, typically made with the luxury of ample time for study and analysis, may have profound impact on later decisions made during crisis conditions.

AltaLink Protection and Control Program

- All-digital protection and control systems being implemented
- Installing LANs within the substation to interconnect intelligent devices
- Last few years focused on upgrading communications from analog to digital
- Recently upgraded to a new EMS

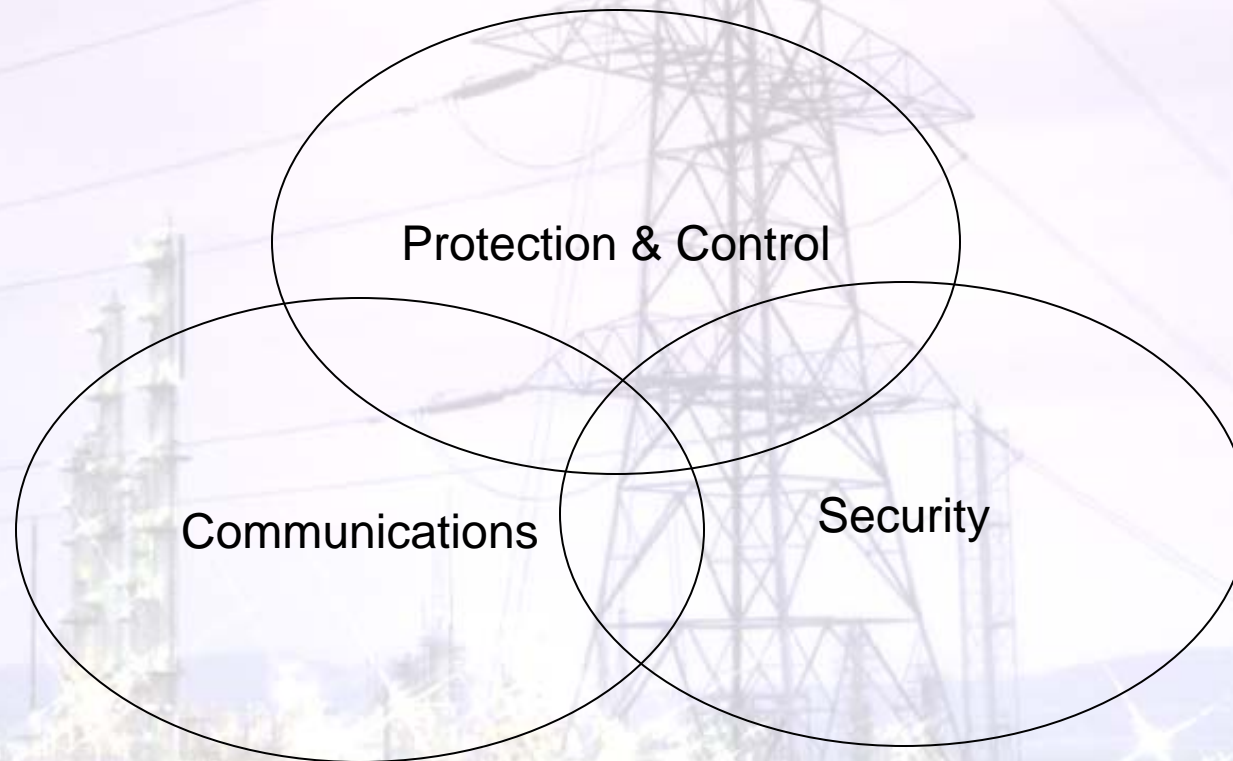
METC Protection and Control Program

Key Requirements

- Address aging equipment issue
- Address DOE Aug 14th Blackout Recommendations
- Address Cyber Security & Physical security issues
- Approach not piecemeal but integrated
- Phased approach that completes 345KV backbone first
- Assure reliable operation during transition.
- Integrate functionality with new EMS system

Related Requirements

- Three key areas involved



Protection & Control

- Need to leverage leading technology:
 - Fiber not Wire
 - Integrated not discrete
 - Take advantage of “everything in the box”
- Drop in control houses
- Standardized design for clusters of substations
- Well planned field execution

Communications

- Facilitate all communications between remote locations (substations) and host centers
 - Internal & External
 - Operations EMS/SCADA
 - Asset Mgmt
 - Midwest ISO
 - Security monitoring
 - Third-party service providers
 - Assure priority signals get through
 - Protection/Control vs. Data/Information

Security

- Need to address cyber security issues
 - Engage leading security technology
- Need to address physical security issues
 - Personnel screening
 - Physical access control
 - Physical security monitoring
 - Physical security audit trail (who was where when)

P&C Technology Detail

- August 14th Blackout Recommendations we intend to implement:
 - Overall protection schema will be simplified
 - Install phasor measurement units
 - Working with the Eastern Interconnection Phasors Project to determine optimal locations
 - Install long duration disturbance recorders at key substations and interconnections
- Centralized data historian for all operating data accumulated at substations

Key Features

- Integration of Protection and Control, Communications and Security creates significant value to the overall operation
- Addresses major recommendations identified in the Aug 14th, 2003 Blackout Report.
- Leverages key supplier strengths enabling rapid deployment and results

Conclusions

- Focus on transmission only enables greater attention to developments beneficial to our business
- Resources are not diverted away from the key business to other interests
- Multifaceted approach gets better return on investment



Thank you!



Trans-Elect, Inc.